

VER 3

/12 Ch 18 Quiz Chem 122 Version 3 Name: _____

1. A) Write the equilibrium expression for the following.



$$K_{eq} = \frac{[\text{H}_2\text{O}]^6 [\text{NO}]^4}{[\text{NH}_3]^4 [\text{O}_2]^5}$$

- B) Calculate the value of K_{eq} for the reaction A) above if analysis of the equilibrium mixture in a 1.00L flask at 650°C gives the following results

$$[\text{NH}_3] = 0.12 \text{ mol}$$

$$[\text{O}_2] = 0.40 \text{ mol}$$

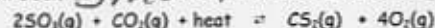
$$[\text{H}_2\text{O}] = 0.30 \text{ mol}$$

$$[\text{NO}] = 0.25 \text{ mol}$$

$$K_{eq} = \frac{0.3^6 \times 0.25^4}{0.12^4 \times 0.40^5}$$

$$= 1.34$$

2. Carbon disulfide can be made by the reaction of carbon dioxide and sulfur trioxide.



Assuming that the reaction is at equilibrium, what effect do the following changes have on the equilibrium position?

- A) Addition of CO_2 RIGHT
B) Removal of heat LEFT
C) Decrease in the pressure RIGHT
D) Removal of O_2 RIGHT
E) Addition of a catalyst NO
F) Decrease in volume LEFT

R
L
R
R
R
L

3. Give two adjustments that you would make to increase the amount of oxygen for the following equilibrium.



remove NH_3

add H_2O

add NO

decr V

incr P

Any 2

VER 4

/12 Ch 18 Quiz Chem 122 Version 4 Name: _____

1. A) Write the equilibrium expression for the following.



$$K_{eq} = \frac{[\text{NH}_3(\text{g})]^4 [\text{O}_2(\text{g})]^5}{[\text{H}_2\text{O}(\text{g})]^6 [\text{NO}(\text{g})]^4}$$

- B) Calculate the value of K_{eq} for the reaction A) above if analysis of the equilibrium mixture in a 1.00L flask at 650°C gives the following results

$$[\text{H}_2\text{O}] = 0.30 \text{ mol}$$

$$[\text{NO}] = 0.25 \text{ mol}$$

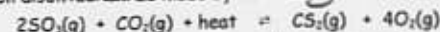
$$[\text{NH}_3] = 0.12 \text{ mol}$$

$$[\text{O}_2] = 0.40 \text{ mol}$$

$$K_{eq} = \frac{0.12^4 \times 0.40^5}{0.30^6 \times 0.25^4}$$

$$= 0.75$$

2. Carbon disulfide can be made by the reaction of carbon dioxide and sulfur trioxide.



Assuming that the reaction is at equilibrium, what effect do the following changes have on the equilibrium position?

- A) Removal of O_2 RIGHT
B) Addition of a catalyst NO
C) Decrease in volume LEFT
D) Addition of CO_2 RIGHT
E) Removal of heat LEFT
F) Decrease in the pressure RIGHT

R
R
L
R
L
R

3. Give two adjustments that you would make to increase the amount of oxygen for the following equilibrium.



remove NH_3

add H_2O

add NO

incr P

decr V

any 2